CLAIMS

What is claimed is:

1. A heating plate crystallization method used in a crystallization process for a poly-silicon thin-film transistor, the heating plate crystallization method comprising:

forming a substrate;

forming a non-crystal layer on the substrate; and

depositing a heating plate layer on the non-crystal layer, wherein a heating plate area pattern is presented on the heating plate layer by using a lithography etching process so as to obtain a heating plate area, and by means of the characteristic provided by the present invention, namely, the heating plate area has a better absorption rate to the infrared rays and has a high thermal stability, the heating plate area is used for absorbing the infrared rays, and after the heating, the energy is indirectly transferred to the amorphous layer via a thermal conduction method so that the

amorphous layer is rapidly crystallized to form the poly-silicon, and the present invention uses the pulsed rapid thermal annealing process (PRTP), using the infrared rays to instantly heat, to selectively heat the materials by taking the advantage that different materials have different absorption rates to the infrared rays. However, the glass substrate and the amorphous cannot effectively absorb the infrared rays so that the glass substrate will not be broken while the process temperature of the heating plate area is excessively high (>700℃).

2. The heating plate crystallization method of claim 1, wherein the substrate can be a glass substrate, quartz substrate.

3. The heating plate crystallization method of claim 1, wherein the heating plate layer can absorb the infrared rays and has a high thermal stability.

4. The heating plate crystallization method of claim 1, wherein a thin oxide layer is deposited between the heating plate area

and the amorphous layer, and when using the oxide layer to stop the rapid thermal annealing process, the high thermal diffusion will occur between the heating plate area and the amorphous layer so as to effectively avoid the metal pollution in TFT device channel area.

5. The heating plate crystallization method of claim 3, wherein the heating plate layer is made of MoW with thermal stability.

6. The heating plate crystallization method of claim 3, wherein the heating plate layer is made of Cr with thermal stability.

7. The heating plate crystallization method of claim 3, wherein the heating plate layer is made of W with thermal stability.

8. A heating plate crystallization poly-silicon thin-film transistor comprising:

forming a substrate;

forming a non-crystal layer on the substrate; and

depositing a heating plate layer on the non-crystal layer, wherein a heating plate

area pattern is presented on the heating plate layer by using a lithography etching process so as to obtain a heating plate area, and by means of the characteristic provided by the present invention, namely, the heating plate area has a better absorption rate to the infrared rays and has a high thermal stability, the heating plate area is used for absorbing the infrared rays, and after the heating, the energy is indirectly transferred to the amorphous layer via a thermal conduction method so that the amorphous layer is rapidly crystallized to form the poly-silicon, and the present invention uses the pulsed rapid thermal annealing process (PRTP), using the infrared rays to instantly heat, to selectively heat the materials by taking the advantage that different materials have different absorption rates to the infrared rays. However, the glass substrate cannot absorb the infrared rays so that the glass substrate will not be broken while the process temperature is excessively high (>

700℃).

9. The heating plate crystallization poly-silicon thin-film transistor of claim 8, wherein the substrate can be a glass substrate, quartz substrate.

10. The heating plate crystallization method of claim 8, wherein the heating plate layer can absorb the infrared rays and has a high thermal stability.

11. The heating plate crystallization method of claim 8, wherein a thin oxide layer is deposited between the heating plate area and the amorphous layer, and when using the oxide layer to stop the rapid thermal annealing process, the high thermal diffusion will occur between the heating plate area and the amorphous layer so as to effectively avoid the metal pollution in TFT device channel area.

12. The heating plate crystallization method of claim 10, wherein the heating plate layer is made of MoW with thermal stability.

13. The heating plate crystallization method of claim 10, wherein the heating plate

layer is made of Cr with thermal stability.

14. The heating plate crystallization method of claim 10, wherein the heating plate layer is made of W with thermal stability.